

Appl. No. 10/611,488
Reply to Office action of May 5, 2004

Amendment to the Specification:

Please insert the following paragraphs after the third paragraph on page 6:

In a preferred embodiment, the invention is a single, manually-adjustable hydrofoil and spar truss assembly for stabilizing a sail assisted canoe, kayak, or sailboat of less than 25 feet in overall length, comprising: a handle comprising two pieces of tubing, one of which telescopes into the other permitting the length of said handle to be adjusted; a tubular shaft of between five and 10 feet in length connected to said handle at approximately a right angle thereto; a hydrofoil approximating the shape of the letter "L" consisting of a vertical portion connected to said tubular shaft at approximately a right angle thereto and a submerged blade portion oriented so as to i) make an angle of approximately 90 degrees with said vertical portion of the hydrofoil, ii) be approximately parallel to both the surface of the water and the tubular shaft when in operation, and iii) make an angle of approximately 90 degrees with said handle when in operation and when viewed from above; and a means of positioning said tubular shaft between a main hull of the canoe, kayak, or small sailboat and a small outrigger hull, such that the tubular shaft remains at approximately a 90 degree angle to the longitudinal axes of both hulls, comprising i) a curved, athwartships-oriented, outrigger spar connecting said hulls, ii) two or more struts fixed to the curved, athwartships-oriented, outrigger spar at their upper ends and having machine screws or a sleeve at their lower ends by means of which the tubular shaft is permitted to rotate around its longitudinal axis, and is prevented from moving longitudinally in relation to the curved spar, such that the entire assembly of handle, foil, tubular shaft, curved, athwartships-oriented, outrigger spar, struts and machine screws/sleeve has but a single moving part that permits continuous manual adjustment of the angle of attack of the foil, and that forms a truss that is strong and light and is resistant to vertical flexion or distortion. Preferably, the manually-

adjustable hydrofoil and spar truss assembly further comprises: another curved, athwartships-oriented, outrigger spar connecting said hulls, and an accessory seat or equipment carrying device intended to carry a single passenger or fishing or camping equipment on, and at or near the highest point of, the curved, athwartship-oriented, outrigger spars comprising: two fore-and-aft rails the ends of which rest on, or snap onto, or are otherwise affixed to said athwartships-oriented outrigger spars, and a webbing or fabric sling attached to and suspended between said fore-and-aft rails, such that i) the weight of the device and the contents thereof is distributed evenly between said fore-and-aft rails and at or near the middle of the athwartships-oriented outrigger spars, contributing to the stability of the outrigger canoe, and ii) the device and the contents thereof are positioned at or near the highest point of said athwartships-oriented spars, insuring that the device and its contents are positioned as far from the water as possible.

In another preferred embodiment, the invention is a single, manually-adjustable hydrofoil and spar truss assembly for stabilizing a sail assisted canoe, kayak, or sailboat of less than 25 feet in overall length, comprising: a handle comprising two pieces of tubing, one of which telescopes into the other permitting the length of said handle to be adjusted; a tubular shaft of between five and 10 feet in length connected to said handle at approximately a right angle thereto; a hydrofoil approximating the shape of the letter "L" consisting of a vertical portion connected to said tubular shaft at approximately a right angle thereto and a submerged blade portion oriented so as to i) be approximately parallel to both the surface of the water and the tubular shaft when in operation and when viewed from above, and ii) make an angle of approximately 90 degrees with said handle when in operation and when viewed from above, and iii) make an angle of between 100 degrees and 110 degrees with said vertical portion of the hydrofoil in order to generate not only upward and downward forces to resist heeling when the canoe, kayak, or sailboat is sailed on both port and starboard tacks, but also a sideways or athwartships force vector that will always be directed toward the windward side of the canoe, kayak, or sailboat when beating to windward, regardless of which tack the vessel is on, thereby increasing the vessels' windward sailing performance; and a means of positioning said tubular shaft between a main hull of the canoe, kayak, or small sailboat and a small outrigger hull, such that the tubular shaft remains at approximately a 90 degree angle to the longitudinal axes of both

hulls, comprising i) a curved, athwartships-oriented, outrigger spar connecting said hulls, ii) two or more struts fixed to the curved, athwartships-oriented, outrigger spar at their upper ends and having machine screws or a sleeve at their lower ends by means of which the tubular shaft is permitted to rotate around its longitudinal axis, and is prevented from moving longitudinally in relation to the curved, athwartships-oriented, outrigger spar, such that the entire assembly of handle, foil, tubular shaft, curved, athwartships-oriented, outrigger spar, struts and machine screws/sleeve has but a single moving part that permits continuous manual adjustment of the angle of attack of the foil, and that forms a truss that is strong and light and is resistant to vertical flexion or distortion.

In yet another preferred embodiment, the invention is a single, manually-adjustable hydrofoil and spar truss assembly for stabilizing a sail assisted canoe, kayak, or sailboat of less than 25 feet in overall length, comprising: a handle; a tubular shaft of between five and 10 feet in length connected to said handle at approximately a right angle thereto; a hydrofoil approximating the shape of the letter "L" consisting of a vertical portion connected to said tubular shaft at approximately a right angle thereto and a submerged blade portion oriented so as to i) make an angle of approximately 90 degrees with said vertical portion of the hydrofoil, ii) be approximately parallel to both the surface of the water and the tubular shaft when in operation, and iii) make an angle of approximately 90 degrees with said handle when in operation and when viewed from above; and a means of positioning said tubular shaft between a main hull of the canoe, kayak, or small sailboat and a small outrigger hull, such that the tubular shaft remains at approximately a 90 degree angle to the longitudinal axes of both hulls, comprising i) a curved, athwartships-oriented, outrigger spar connecting said hulls, ii) two or more struts fixed to the curved, athwartships-oriented, outrigger spar at their upper ends and having machine screws or a sleeve at their lower ends by means of which the tubular shaft is permitted to rotate around its longitudinal axis, and is prevented from moving longitudinally in relation to the curved spar, such that the entire assembly of handle, foil, tubular shaft, curved, athwartships-oriented, outrigger spar, struts and machine screws/sleeve has but a single moving part that permits continuous manual adjustment of the angle of attack of the foil, and that forms a truss that is strong and light and is resistant to vertical flexion or distortion.

In a further preferred embodiment, the invention is an assembly for stabilizing a vessel having a main hull and an outrigger hull that is attached to the main hull by a spar, said assembly comprising: a shaft having a first longitudinal axis, said shaft being connected to the spar at a first location that is closer to the main hull than to the outrigger hull and at a second location that is closer to the outrigger hull than to the main hull, said shaft being connected to the spar in such a way that said shaft can rotate around said first longitudinal axis over a first angle of about 135 degrees; a handle having a second longitudinal axis, said handle being fixed to said shaft adjacent to said first location and being oriented at a second angle of approximately 90 degrees to said first longitudinal axis; a hydrofoil that is connected to said shaft adjacent to said second location, said hydrofoil having a first portion having a third longitudinal axis that is oriented at a third angle of about 90 degrees to said first longitudinal axis and at a fourth angle of about 90 degrees to a line substantially parallel to said second longitudinal axis, said hydrofoil further having a second portion that is fixed to said first portion and that is oriented at a fifth angle of between about 100 degrees and 110 degrees to said third longitudinal axis. Preferably, the spar is curved upward between the main hull and the outrigger hull and said shaft is straight and wherein the distance between said first location and said second location is fixed by the manner in which said shaft is connected to said spar at said locations, said spar and shaft thereby forming a truss that effectively stiffens said spar. Preferably, said handle comprises two portions, one of which portions telescopes into the other, thereby rendering the length of said handle adjustable. Preferably, the outrigger hull is attached to the main hull by two spars, said assembly further comprising: a sidecar comprising a frame having two rails with ends that connect to the two spars and a sling that attaches to said frame between said rails.

In another preferred embodiment, the invention is an assembly for stabilizing a vessel having a main hull and an outrigger hull that is attached to the main hull by a curved spar, said assembly comprising: a substantially straight shaft having a first longitudinal axis, said shaft being connected to the spar at a first location that is closer to the main hull than to the outrigger hull and at a second location that is closer to the outrigger hull than to the main hull, said shaft being connected to the spar in such a way that said shaft can pivot around said first longitudinal axis; a handle having a second longitudinal axis, said handle being fixed to said shaft adjacent to

said first location; a hydrofoil that is connected to said shaft adjacent to said second location, said hydrofoil having a first portion having a third longitudinal axis that is oriented at an angle of about 90 degrees to said first longitudinal axis, said hydrofoil further having a second portion that is fixed to said first portion and that is oriented at a second angle of greater than 90 degrees to said third longitudinal axis.